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Development and Pilot Study of Group-Based Dietary Self-Management Program for Community Dwellers with Hypertension

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Background: In most countries worldwide, hypertension is considered as an important problem. Moreover, an increasing trend in the prevalence and incidence has been reported in most countries. This increasing trend requires an innovative approach to improve the lifestyle modification of hypertensive sufferers including their dietary behaviors.
Objective: This developmental research aims to develop a program for improving the dietary behaviors of community dwellers with hypertension.
Method: The process of this program development includes a literature review related to the self-management programs for hypertension, and dietary behavior outcomes, expert validation, and pilot testing.
Result: The setting, strategies, duration, and outcome measurement from the literature review were taken into consideration to develop the new program. The newly developed group-based self-management program consists of: 1) the sharing and reflecting of individual current dietary behavior, 2) group educational session, 3) individual comparison of behavior and reflection of obstacles, 4) individual goal setting, and 5) follow up. In the educational session, the DASH eating plan is used as the reference as it is commonly used in studies about diet for hypertension.

Key words: hypertension, self-management, group based program, dietary behaviors.

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Background

Hypertension is one of the important challenges in many countries due to its high prevalence and strong association with other diseases, such as cardiovascular diseases (Committee on Public Health Priorities to Reduce and Control Hypertension, 2010). Approximately 8 million deaths each year are blood pressure related, with rates having risen by 56.1% from 1994 to 2004 worldwide (Sood, Reinhart & Baker, 2007). In 2000, there were 972 million people living with hypertension worldwide and it is estimated that this number will increase to more than 1.56 billion by the year 2025 (Chockalingam, Campbell & Fodor, 2006). Meanwhile, according to a hypertension expert from the National Heart Center Harapan Kita, Indonesia, the prevalence of hypertension in Indonesia in people over the age of 35 years was more than 15.6 percent in 2004 (Healthy Life Journal, 2010).

Hypertensive care in community nursing involves having a structured non-pharmacological treatment plan including counseling about lifestyle changes in regards to smoking, alcohol consumption, weight, diet, physical activity and stress management (Bengston & Drevenhorn as cited in Drevenhorn, Kjellgren & Bengston, 2005). In the empirical studies, the behaviors that are often related to hypertension are diet modification, weight control, alcohol use, smoking, and physical activity (Hall, Rodin, Vallis & Perkin, 2009; Matlock et al., 2009; Park et al., 2010; Xue, Yao & Lewin, 2008). Meanwhile, according to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7), the behaviors consist of weight reduction, Dietary Approaches to Stop Hypertension (DASH) eating plan, dietary sodium reduction, physical activity, and the moderation of alcohol consumption. Persons with hypertension should be encouraged to adopt these behaviors, especially for those who have additional risk factors for cardiovascular disease and diabetes mellitus (Neaton et al.; Singer et al. as cited in Chang, McAlister, Taylor & Chan, 2003).

Nutritional status and the intake of many nutrients affect the incidence and severity of hypertension. It is why dietary behavior is necessary in order to promote, prevent, and manage hypertension. A high intake of sodium chloride predisposes to hypertension as well as the intake of alcohol while high intakes of potassium, polyunsaturated fatty acids, and protein, along with exercise and possibly vitamin D can lower the blood pressure. Moreover, recent studies note that the DASH diet is one good way to prevent or ameliorate mild hypertension, because DASH provides the eating plan which is high in fruits, vegetables, and low-fat dairy products (Savica, Bellinghieri, & Kopple, 2010). However, sometimes lifestyle changes are not easily achieved (Ebrahim & Smith as cited in Drevernhorn et al., 2005).

Health education has been associated with improvements in knowledge about hypertension, while education combined with individualized support for patients to self-manage hypertension, including goal setting and monitoring can enhance patient self-management of hypertension, and family support in managing hypertension were associated with reductions in blood pressure levels and improvements in blood pressure control (Connell, Wolfe & McKevitt, 2008). Therefore, self-management has been proven as one way to solve this issue.

Using a group to treat patients with a similar condition is one method to improve throughput and provide a more cost-effective service. Group work has been known for many years as an effective way in providing exercise therapy, educational programs (Gardiner; Hill, as cited in Cook, 2001), and problem solving ability and promoting healthy behaviors (Varekamp et al., 2009). Group learning fits the needs of adult learners where personal, social, and professional experiences are used in the process. In addition, social constructivist theorists believe that understanding is built within a social environment. It is built when individuals take part in talk and activity about shared problems or tasks (Pareles, Lockyer, & Fidler, 2002). Most studies involved the health personnel such as nurses, therapists,

physiotherapists, psychologists, counselors, dieticians, etc. Mostly, the programs were separated into several group sessions over a period of time. The programs offered several activities such as an educational session, reflection of experiences, goal setting, and monitoring.

Objective

The present study aims to develop a program for improving the dietary behaviors of community dwellers with hypertension. The elements of the group-based dietary self-management program were identified and discussed.

Methods

There were three systematic phases of this program development, namely a literature review, expert validation, and a pilot study. Each phase is explained as follows:

Literature review

To meet the objective of the study, relevant literature was reviewed. The authors used http://lib.med.psu.ac.th/libmed2010/ as the main source to search the relevant journals, articles, and other comprehensive reports from the health-related databases such as Science Direct, PubMed, Cumulative Index to Nursing and Allied Health (CINAHL), and ProQuest Medical Library. Moreover, the authors also used the universal case entry website such as Google-scholar and other official websites. A number of keywords were used to obtain the information for this study: hypertension, self-management, group based program, and dietary behaviors. Only literature written in English was included. The content, strategies, duration of the program, and outcome measurements from the literature review were taken into consideration in developing the new program.

Expert validation

After the program had been developed, the content of the program was validated by three experts. Two were from the Faculty of Nursing Prince of Songkla University, Thailand and another one was from Faculty of Nursing Chiang Mai University, Thailand. The instruments consist of the program guideline, a teaching plan for the educational session, and the goal setting form. These instruments had been modified and revised based on the suggestions and comments from the experts.

Pilot study

A pilot study was conducted to examine the feasibility of the planned intervention procedure. Seven persons who have the same criteria with the samples of the present study were recruited to form a group in receiving the planned intervention.

Result and Discussion

Nine published studies were reviewed to obtain information about a group-based self management program. Five of nine studies were randomized controlled trials (RCT) (Bosworth et al., 2009; Fanaian et al., 2010; Kendall et al., 2007; Swerisson et al., 2006; Xue et al., 2008) and the other four were quasi experimental studies (Hall et al., 2009; Saelens et al, 2000; Scheurs et al., 2003; Siu et al., 2005). All the studies delivered a self-management program in group sessions. Mostly, the contents and outcomes of these studies not only focused on the dietary behaviors, but also on other kinds of behavior and various outcomes.

Settings

The intervention of the studies was conducted in various settings and locations; community settings such as a community center, churches, and a senior citizen club, (Scheurs et al., 2003; Swerisson et al., 2006), a cardiac patient club (Xue et al., 2008), hospital-based outpatients (Hall et al., 2009; Kendall et al., 2007), general practices (Fanaian

et al., 2010), primary care clinics (Bosworth et al., 2009), specialist clinics (Siu et al., 2005), and a large urban university (Saelens et al, 2000).

Strategies of the program

One of the strategies used in the program is self-management knowledge and skills. This program offered sessions for individuals and lifestyle education for a group. The self-management strategy was applied in the group session, which consists of goal setting, self-monitoring, developing practical skills, and problem solving to promote positive dietary and physical activity changes and weight loss. In another study by Xue et al. (2008), the participants were divided into six small groups with 10-12 patients per group for an educational talk about diet, physical activity, alcohol and smoking, the introduction of goal setting, and led exercise sessions. In addition, trained professional leaders and trained lay leaders were used as role models in the group sessions (Siu et al., 2005; Swerisson et al., 2006; Kendall et al., 2007). In contrast to Xue's study, a study by Scheurs et al. (2003) provided self-management tasks; sharing beliefs, emotions, experience, and barriers; action plans; and goal attainment.

Duration of intervention

Several studies used the standardized Chronic Disease Self-Management Program (CDSMP) and spent six weeks on the intervention (Siu et al., 2005; et al., 2006; Kendall et al., 2007). However, each study has a different follow up timeframe. A study by Siu et al. followed up the measurement in one week following the intervention. On the other hand, a study by Swerisson et al. conducted the follow up six months after the program. Meanwhile, a study by Kendall et al. did the follow up four times in a 12 month period; at 3, 6, 9, and 12 months. Similarly with a study by Swerisson, et al., the follow up of the study by Hall et al. (2009) was held 6 months after the treatment.

A study about health improvement and prevention study which used self-management knowledge and skills did the follow up 9 months after the beginning of the program. During the 9 months, there were 6 group sessions conducted (Fanaian et al., 2010). Meanwhile, in a randomized trial of a self-management program, the intervention was conducted for 5 weeks and contained 4 group treatment sessions. The follow up was held 1 month and 4 months after ending the treatment (Xue et al., 2008). This was similar in the duration of an intervention in a study by Scheurs et al., (2003) which also took 5 weeks.

This is different from a randomized control trial about a self-management intervention which took 24 months. The evaluation of blood pressure was held every 6 months over a 24 month period. There were four groups attending the program. Each group received a different intervention and duration of the intervention. The tailored behavior self-management group accepted the intervention twice a month, the home blood pressure monitoring group monitored their blood pressure three times a week and the combined group did both interventions that the first and second group did (Bosworth et al., 2009). A similar duration of intervention was found in a study by Saelens et al. (2000) which also completed the assessment after 24 months. The follow up was held twice; 1 year and 2 years after ending the intervention.

Measurements

From the articles that were reviewed, some of studies have diet as the behavioral outcome. There are several measurements which have been used in the various studies. The instrument for diet as a behavioral outcome that was used in a study in Sweden was food habit. The limit of a satisfactory blood lipid level was set for the study as the indicator of the program. In the intervention, the samples were given simple advice about distributing food throughout the day, reducing the intake of energy-rich food, choosing light dairy products and low-fat cheese, choosing cooking oil high in mono- and/or poly-unsaturated fat (olive or rape

oil), eating fish more often, eating chicken rather than pork and beef, choosing bread and cereals rich in fiber, cutting off visible fat, choosing low-calorie delicatessen products, eating more fruit, vegetables and root vegetables and distinguishing between weekdays and special occasions. Then in the follow up, participants were assessed as to whether a satisfactory level of blood lipids was achieved or not (Drevernhorn et al., 2007).

A different approach was used in a study about HIPS program for preventing vascular disease, and the diet behavior was measured by using a daily living diary. However, the authors did not mention clearly how to use the tool nor the validity and reliability of the tool (Fanaian et al., 2010). Meanwhile, diet behavior was measured using the validated food frequency questionnaire (FFQ). In this study, the samples were asked about their diet in the last three months, and then it was compared twice in two follow ups. The first follow up was 1 month after ending the treatment, and the second follow up was 4 months after ending the treatment (Xue et al., 2008).

Food Frequency Questionnaire (FFQ) is commonly used for assessing diet and health in large epidemiologic studies. In the application, this instrument asks participants to report the size and portion of consumption in a particular period (Fred Hutchinson Cancer Research Center, 2011). There is one study which assessed the validity and reliability of FFQ for hypertension. It shows that it has good reliability (Kappa coefficients ranged from 0.79-0.98) and validity (correlation coefficients varying from 0.19 (general sample)-0.31 (female sub-sample) (Ferreira-Sae et al., 2009).

In summary, from the studies that were reviewed, there are several measurements used for assessing the diet in self-management programs. There are food habit, daily living diary, and validated food frequency questionnaire (FFQ). For this newly developed program, the setting was in the community, the content of the program specifically focused on dietary behaviors for hypertensive people, the strategy was group sessions, the duration was 4-weeks,

and the outcome measurement was a new-developed tool (goal setting form).

Group-based self-management program on dietary behaviors

The group-based dietary self-management program was developed by the authors by using the self-management method developed by Kanfer and Gaelick-Buys (1991) as the conceptual framework. This program was held in a community setting. It comprises of 4 weeks with 2 group meetings; in the first week and fourth week.

The description of the program is as follows:

Week 1

The interventions in this meeting were; (1) the sharing and reflecting of individual current dietary behaviors. The researcher asked all group members about what they have done in regards to their diet. Then, the group leader wrote all the given answers (diet behaviors) in a table on a flipchart. Then, every group member got some stickers. These stickers were patched individually in the columns to indicate their individual current dietary behaviors. Lastly, the group leader made a conclusion based on the number of patched stickers, (2) an education session by the researcher about hypertension and dietary behaviors. The samples were encouraged to match the questions about hypertension with the answer choices provided in the answer bank. Then, a body map was also used to make it easier to indicate which body parts can be damaged by hypertension. Next, the artificial food models or real foods were provided by the researcher to increase the participants' understanding, especially about the serving size of each food group. (3) Individual comparison of behavior and a reflection of obstacles, and (4) individual weekly goal setting. The researcher assisted every group member to identify their goal for one week. Then, the researcher informed them how to use the goal setting form for the following weeks. The goal setting form was used independently by themselves without any intervention from the researcher

Week 2, Week 3, and Week 4

For week 2 until week 4, the samples monitor their dietary behaviors by continuing and completing the goal setting form by themselves for the total of three weeks. It was done weekly without any intervention from the researcher. The goals could be maintained, modified, and added to by the participants themselves. Moreover, the group members could call their group leaders during this period if they meet any difficulties and problems about completing the goal setting form. Group leaders also provided motivation to all group members in improving their goals and actions. If the leaders could not solve the problem faced by the group members, they called the researcher to help them.

Week 4

For this last meeting, the researcher discussed with the samples about their progress in performing the desired behaviors that they have been set during the previous weeks. They were assisted to reflect and evaluate their achievement by using the goal setting form. Moreover, the researcher reinforced and encouraged them to continue what they have been doing during the program.

The Goal Setting Form

This form was developed by the researcher. It was used by the samples to record their weekly goals and achievements. The form consists of planned goals and actions, the planned frequency, its actual implementation and achievement. The way to use this form was explained by the researcher in order to guide the samples in completing it by themselves. It was completed by the samples every week without any intervention from the researcher.

Table 1. *Implementation of group-based self-management program on dietary behavior*

Week 1	Week 2, 3, and 4	Week 4
First group meeting • The smaller groups were formed by the	• The samples continued and completed the goal setting and action plan	**Second group meeting** • Follow up by using goal setting form,

samples • The number of the members was 8-12 people • Introduction between author and group members. • Sharing and reflecting of individual existing dietary behaviors • Education session about hypertension and dietary behaviors. • Individual comparison of behavior and reflection of obstacles. • Individual weekly goal setting and action.	form by themselves.	discussion, and giving reinforcement and recommendation for the future.

Expert validation

All three experts gave valuable suggestions and comments for each instrument; program guideline, teaching plan for the educational session, and the goal setting form. All three experts suggested adding more comprehensive and complete food items in each food group and adjusting the kinds of food that are familiar with the targeted samples.

Pilot study

The result of the pilot study showed that in general, the planned group-based dietary self-management program was feasible to be adapted for the targeted samples. Actually, in the planning of the intervention, there were separate meetings of group forming and the intervention. However, the researcher found that it was very difficult to gather everyone again in another meeting due to their busy lives and other commitments. Therefore, the group forming and the intervention were done at the same time. Another issue was, in the planning there was a food demonstration in the second meeting. However, the researcher found that no one brought the foods to the meeting. Therefore, the food demonstration was not included in the program.

Conclusion

The self-management concept emphasizes the engagement of the people themselves in managing the symptoms, treatment, and lifestyle modification including dietary behaviors. From the evidence, it has been proven that this concept is effective to help people to change their behaviors. Thus, it is frequently used as the conceptual framework to guide the implementation of the program related to behaviors, including dietary behaviors. The setting, strategies, duration, and measurement of the previous studies were varied, but still showed an improvement of the dietary behaviors of the people with hypertension or other chronic diseases. Moreover, delivering the program in a group session is time and cost effective, and appropriate to be applied in adults and people with similar conditions. That information is very important to develop the new group-based self-management program on dietary behaviors. Moreover, the results of expert validation and the pilot study have shown that this program is applicable and feasible to be conducted for the community dwellers with hypertension.

Recommendation

The increasing trend of hypertension worldwide requires health care providers to consider the importance of improving better behaviors in hypertensive people. The self-management concept has been used widely in several chronic diseases including hypertension and has shown its effectiveness in improving dietary behaviors. This newly-developed program has been tested for its validity and feasibility by approaching experts and conducting a pilot study. Thus, it is recommended that this program can be applied in caring for the people with hypertension living in the community.

Future research is needed to examine the effectiveness of a group-based dietary self-management program in many countries. Therefore, it is expected that hypertensive people will have better dietary behaviors so that the complications of the disease can be reduced.

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